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ABSTRACT

Contained in this report is an evaluation of the ESEA Title I Environmental-Ecological Education Program for educationally disadvantaged students operated by the Brookville Area School District, Pennsylvania. The program is a modification of a previously operated ESEA Title III Rural Youth Enrichment Program. Conducted during the summer of 1970, 300 fourth, fifth, and sixth grade students participated in a program of science instruction, recreation, arts and crafts. Field trips, laboratory examinations, and small group study utilized a multi-sensory approach to learning through participation. Tools developed for data collection consist of a pre- and post Self-Appraisal Instrument, Science Achievement checklist, Arts and Crafts Achievement checklist, and a Student Opinion Survey, all included in the Appendix. Data from these tests and checklists is reported in table form. The conclusion indicates the major objective was achieved, that is, to motivate and encourage the disadvantaged student toward a more fulfilling and rewarding educational experience through activities which are currently not provided to any extent within the present school curriculum and which broaden his overall understanding of natural resources, their uses, misuses, and conservation practices. The final appendix contains a descriptive and pictorial brochure of the program for general consumption. This work was prepared under an ESEA Title I contract. [Not available in hard copy due to marginal legibility of original document.] (BI)

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EVALUATION REPORT

Brookville EEE Program

ESEA Title I

Summer, 1970

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An evaluation of the ESEA Title I Environmental-Ecological Education Program for educationally disadvantaged students operated by the Brookville Area School District in cooperation with the participating school districts in Clarion, Forest, Jefferson, Mercer, and Venango Counties.

Don L. Morgan, Ph.D.

Research-Learning Center
Clarion State College

November, 1970

SE 010 870

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PART 1: INTRODUCTION

Abstract ESEA Title I Summer Program Using Reallocated Funds

Sponsoring Agency - Brookville Area School District will serve as the LEA for the project.

The Brookville Area School District has operated a Rural Youth Enrichment program for the past three years with Title III funds. The equipment and materials purchased in these previous programs will be used in the summer school Title I ESEA program. The basic program will be six weeks in length and will involve approximately 300 Title I fourth, fifth, and sixth grade students from Region F. The program will be self-contained in that children will be provided sleeping quarters and food while staying at the Brookville High School. Approximately 100 students at a time will spend a two week time period in the Brookville program and will return home on the weekends.

The major focus of the program will be on environmental education. Other instructional activities will include arts and crafts and recreation.

The science instruction will consist of two separate classes. One class will be involved in learning about water and its relationship to man and animals. Students will visit water habitats, collecting water samples and take them back to the science lab. These samples could be analyzed for life and various ecosystems within. The other science class will provide opportunities for students to learn about ecosystems in the soil and an indepth examination of the land about them. Both of these classes could then focus on man's ecosystem and the problems of pollution and its effect on man and animals. Appropriate field trips utilizing nearby resources and other areas of interest would become an integral part of the instructional program. These classes would be taught by two qualified teachers who would be assisted by eight teacher aides. It has been found that the age of these students necessitates additional supervisory personnel who will serve a dual role of being an adult figure to whom the students can relate and an interested person with specific tasks to perform in the science instructional program. All students will receive instruction in both of the afore mentioned science classes.

Another instructional area will be recreation. These students need to develop a better self-concept and more social interaction and through individualized instruction in carry-over sports such as archery, swimming, golf, and tennis these objectives might be met. Other group activities in recreation would be softball and other large group activities. Educational games afford students an

opportunity to learn and enjoy themselves at the same time. There will be two instructors assigned to recreational activities, and they will be assisted by eight aides. Recreational activities will also be provided during the late afternoon and early evening hours.

Students in the arts and crafts classes will be applying designs suggested by nature that would supplement their science instructional activities. Other activities will afford the student the opportunity to be creative and achieve a measure of success in his work and at the same time improve his self-image. Two qualified teachers and four aides will work in the arts and crafts program.

The instructional program is aimed at changing attitudes of the students involved in the program. Attitude surveys and anecdotal records on individual students adjustment will be kept. Records of participation will also be kept. The project will be evaluated by the Research-Learning Center of Clarion State College.

Other follow-up activity will be contracted with the Clarion State College Foundation and will include the hiring of a full-time coordinator and eight college students on a part-time basis to work with the students who participated in the Brookville program and interested teachers in their districts in expanding the environmental education programs in their own district. Activities, for example, include cleaning up a polluted stream in their area, rendering service to the community by cleaning up a littered area, participating and initiating other projects or programs in their respective communities.

The program will also serve as a demonstration center for other people interested in environmental problems and educational programs to combat the problem of pollution.*

Rationale for the Triple E Program

This application for funds to operate an Environmental Ecological Education Program is based on several major factors.

First, there is ample evidence that the traditional approaches to remedial education have not been successful in meeting the educational needs of all the educationally disadvantaged children and youth--that what is needed is not some "more of the same," but other types of learning experiences. The Coleman Report (USOE) for example, indicates that children learn best when they believe they can make a difference in their own destiny. This can only be achieved when learners experience success in those things that are important to them. A need, therefore, is to provide important learning experiences in which children can succeed.

* Quoted from project application.

A very important area of learning, which is just emerging as a significant national thrust, is what the USOE calls the EEE program--Environmental, Ecological, Education. If man is to survive, we must learn more about our environment and our relationship to our environment--and do something about our environmental problems before it is too late.

During the past three years, the Brookville School System has conducted an outdoor education type program under ESEA Title III for Region F. The staff and the material resources acquired for that program are available and easily adaptable to an EEE program, stressing "learning by doing" techniques which are highly appropriate especially for those who have reading difficulties.

This program will be assisted, during the summer, by the Youth Leadership Task Force of the Institute on Human Ecology of Clarion State College, which is funded by the Department of Education from ESEA Title I administration funds. This program will also be followed up by the Task Force during the school year at the local level to help implement EEE programs in the school systems of Region F.

The region served by this project includes some of the most devastated areas in the Commonwealth with mine acid drainage a severe environmental problem. The State Legislature has appropriated \$1,500,000 to Clarion State College for the construction of an environmental studies center, to serve the region and the Commonwealth.

In summary, this application is to provide a program which is designed especially to use techniques and procedures to meet the educational needs of the educationally disadvantaged, is dealing with significant national and local problems of special interest of the learners, is capitalizing on the experiences and resources of the ESEA Title III RYE program, and is providing a base to help institutionalize much needed EEE programs in local schools, and will be assisted in the follow-up by the college which is developing a center, under legislative action, to help institutionalize such programs.*

Statement of Needs

The needs of the approximately 300 fourth, fifth and sixth grade pupils selected to participate in the ESEA Title I Environmental, Ecological, Education Program are:

*Quoted from project application.

(1) to experience success, (2) to improve their self-concept, (3) lack of awareness about environmental conditions, (4) to have a role in alleviating and eliminating environmental problems, (5) develop good conservation practices, (6) to achieve in spite of their limited experiences, (7) to make friends and participate in activities, (8) medical and dental care, (9) improve nutrition, and, (10) to know that "someone" cares about them.*

Description of the Program

The approach to these activities will be more personal and less traditional for the student. Rather than having the classroom become a confining and restrictive place, freedom to explore in a multisensory approach will be attempted. In addition to the classroom, experiences at such places as strip mines, collecting fossils, plants and insects, exploring the museum, planetarium, zoo, art galleries will be used to broaden and correlate the various areas of study. These activities will be organized to have the student become active learners rather than merely passive listeners.

Through the use of aides, the children will be given more personalized attention and help than would be possible in larger classes. The program will emphasize field activities to take advantage of the numerous places of value to an environmental-ecological program that are within our area. Also, many of the students have never been able to go to the large cities such as Pittsburgh to take advantage of the cultural activities and places of learning such as the planetarium, museum, art galleries, and zoo.

The "camp-in" will consist of three, two-week sessions. Each session will enroll 100 campers. The students will be divided into four groups for most of the activities of the program. In the morning and afternoon sessions the groups will participate in two science activities as well as an art or craft and recreation. The class periods will consist of two hours. The evening has been divided into two periods of one and one-half hours duration. The evening schedule is designed to utilize group activities in recreation, provide music enjoyment by learning new songs, and to provide the students with an opportunity to utilize materials collected in science by embedding them in plastic, and to have further opportunity to explore creative craft activities. Check sheets will be provided in each area to maintain a record of the activities completed by each student. The newspaper would be an activity which would be optional for all students and time can be selected to find, write and publish their stories. One newspaper will be published each session.*

*Quoted from project application.

Science: Two sections of 25 students at a time will be engaged in science activities for a total of four hours per day. Master teachers will circulate and work with individual groups to coordinate activities. Within each science group, campers will be assigned to individual aides so that the aide-pupil ratio should not exceed 1 to 8. The aide will work with the group on specified activities which the students have shown an interest. Students will be expected to complete as many of these activities as time permits. List of the activities follows: Visit a typical farm; collect soil samples; describe field, woods, strip mines as to kinds of plants, animals, and soil type; find leaves; find insects; find fossils; identify trees; determine direction of compass with reference to fixed objects; make a map of farm area; showing direction, important areas; examine soil samples as to layers in core, types of living, etc. found, chemical tests (litmus and soil kits); make insect nets--collecting nets; prepare killing jars; take a walk and add to leaf collection; prepare an acid (sour) and a basic (sweet) soil; plant oats or other plants in prepared soils and run controls; chromatography of leaves; visit a stream--unpolluted; visit a pond (and swamp); test water samples--detergent; talk about areas visited (temp., light, kinds of plants and animals); find and try to name insects (see film on characteristics of insects); make a terrarium showing a particular environment (field); add to collections of leaves, flowers, insects; make an aquarium. Visit a site of natural formation; Example: an underground cave; observe and examine objects from the environment; classify them (actual fossils and plastic models of fossils will be among the objects); visit a limestone pit--a good fossil site; collect fossils and other rocks; examine, classify and list properties and characteristics of prepared rock specimens; sketch a map of the area; locate and mark fossil site; describe layers in walls of pit--locate layers where fossils were found; wash and clean fossils; identify any mount examples. Visit an area of man-made pollution--a strip mine; observe the operation of the mine and the areas around the site; sketch a map of the strip mine area locating such things as pit, stream, replanting, cleaning plant, etc.; talk about the use of coal, its help and hindrance of man's environment. Visit a zoo; observe various kinds of animals from a variety of environments; talk about the kind of areas that the animals were originally found. Visit a museum; observe both the natural settings of environment, man's record of the past and a look at present accomplishments and problems. The city is a good example of massive pollution due to concentration of population. Take a boat ride to see each of these again from a different point of view. Visit a farm.*

The art and craft activities which the student will be working include: (1) plastic casting to embed found objects such as insects, fossils, and other items found in their environment; (2) design and construction of an identification tag by hand tooling leather; (3) design, cut and print a silkscreen stencil; (4) print a design on a sweatshirt; (5) make an acrylic painting; (6) visit the art galleries within the museum; (7) visit a local art gallery.*

*Quoted from project application.

Recreation activities will be scheduled on a regular basis. Whenever a unit of twenty-five students is assigned to recreation in the morning or afternoon, the unit will be divided into two groups. An aide will be in charge of individual instruction within each group. Each group will receive instruction in individual sports--archery, bowling, golf, and badminton. The instructional period will be two hours long. This period will be divided so that each student will participate in all four sports.

The two sections assigned to recreation in the evenings will concentrate in group activities. These activities will consist of: softball, box hockey, volleyball, tetherball, basketball, and kickball. The students will choose their own activities. Special recreation will also be held on field trips. This recreation may include swimming, games, races and group activities.*

Evaluation

In addition to the on-site visit conducted by the Pennsylvania Department of Education, Bureau of Curriculum and Evaluation, the Clarion State College Foundation has been contracted to provide evaluation services through the Research-Learning Center. In the project application, evaluation techniques were briefly described.

The instructional program is aimed at changing attitudes of the students involved in the program. The evaluation has been designed by the Research-Learning Center in consultation with the project director and instructional personnel. In addition to collecting information about the project's outcomes, it was deemed most desirable to keep paper and pencil assignments and tests at a minimum and to interfere with the program as little as possible.*

The tools developed for data collection (see Appendix A) consist of pre- and post Self-Appraisal Instrument, Science Achievement checklist, Arts and Crafts Achievement checklist, and a Student Opinion Survey, including the Five Statement Test.

The project director will supervise the administration of questionnaires provided by the Research-Learning Center. In addition, he will be responsible for collection, analysis, and drafting of reports of information about (a) attendance data, (b) participation records, (c) any logs and/or anecdotal records, (d) contacts with teaching personnel.*

*Quoted from project application.

PART 2: ATTAINMENT OF OBJECTIVES

The major objective is to motivate and encourage the disadvantaged student toward a more fulfilling and rewarding educational experience through activities which are currently not provided to any extent within the present school curriculum and which broaden his overall understanding of natural resources, their uses, misuses, and conservation practices. The curriculum would be varied enough so that the student will be able to achieve success in the many varied activities such as field trips, individual and group sports and games, geology, nature studies and natural sciences, art, leatherwork and crafts.*

Achievement of Science Objectives

Participants will be allowed to choose science activities in which they participate. Many of the activities will be performed by pairs or small groups rather than by single individuals. The science objectives consist of (1) Finding and classifying objects in his natural environment, (2) Observing and describing various objects within a specified area located in a field, (3) Using various simple materials (nets, screens, tubs, etc.) in locating and collecting pond and field life for observation, (4) Finding and contrasting rocks according to various characteristics. An example of such characteristics considered by the child might be: color, shape, texture, rock type and fossil content, (5) Practicing simple conservation techniques. (An example of this might be the practice of returning life specimens to ponds and streams not needed for observation and by planting trees in mined areas.)*

Table 1 consists of statements of specific science objectives and the number of boys and girls who achieved the respective objectives. The "Science Achievement" check sheet is presented in Appendix A, Evaluation Instruments.

*Quoted from project application.

TABLE 1

SCIENCE ACHIEVEMENT

Objective 1. Given appropriate materials, the student will construct an insect collecting net.*

	1st session	2nd session	3rd session	Total
Boys	38	43	0	81
Girls	43	41	0	84
Total	81	84	0	165

Objective 2. Given instruction and materials, the student will prepare an insect killing jar.*

	1st session	2nd session	3rd session	Total
Boys	2	0	0	2
Girls	10	0	0	10
Total	12	0	0	12

Objective 3. Given a collection of moths and butterflies, the student will differentiate between the two species with at least 80 percent accuracy.*

	1st session	2nd session	3rd session	Total
Boys	3	3	0	6
Girls	4	1	0	5
Total	7	4	0	11

Objective 4. The student will find and identify ten different insects.*

	1st session	2nd session	3rd session	Total
Boys	21	8	10	39
Girls	23	9	4	36
Total	44	17	14	75

*Quoted from project application.

TABLE 1 (contd.)

Objective 5. The student will locate and identify ten different types of trees.*

	1st session	2nd session	3rd session	Total
Boys	35	41	62	138
Girls	40	41	29	110
Total	75	82	91	248

Objective 6. The student will collect a soil sample in a manner acceptable for testing.*

	1st session	2nd session	3rd session	Total
Boys	25	40	62	127
Girls	40	40	29	109
Total	65	80	91	236

Objective 7. Given a soil testing kit and instructions, the student will demonstrate soil testing by the processes available in the kit.*

	1st session	2nd session	3rd session	Total
Boys	28	41	61	130
Girls	33	39	29	101
Total	61	80	90	231

Objective 8. The student will make an acid (sour) soil sample.*

	1st session	2nd session	3rd session	Total
Boys	18	0	32	50
Girls	33	0	12	45
Total	51	0	44	95

*Quoted from project application.

TABLE 1 (contd.)

Objective 9. The student will make a basic (sweet) soil sample.*

	1st session	2nd session	3rd session	Total
Boys	17	0	32	49
Girls	33	0	12	45
Total	50	0	44	94

Objective 10. The student will participate with a group in an experiment planting grain (oat) seeds in three different soils - a field, a wood lot, a strip-mined plot.*

	1st session	2nd session	3rd session	Total
Boys	15	0	58	73
Girls	34	0	28	62
Total	49	0	86	135

Objective 11. With a group, the learner will plant trees to restore land used for strip mining.*

	1st session	2nd session	3rd session	Total
Boys	0	7	0	7
Girls	0	6	0	6
Total	0	13	0	13

Objective 12. In a group discussion, the learner will tell about good conservation practices seen on field trips.*

	1st session	2nd session	3rd session	Total
Boys	27	32	48	107
Girls	17	32	22	71
Total	44	64	70	178

*Quoted from project application.

TABLE 1 (contd.)

Objective 13. Given a compass, the learner will demonstrate its use to determine directions.*

	1st session	2nd session	3rd session	Total
Boys	45	34	49	128
Girls	42	29	27	98
Total	87	63	76	226

Objective 14. While visiting a farm area, the learner will construct a diagram which shows direction & obvious landmarks (RR, buildings, road, stripped area, field, woods).*

	1st session	2nd session	3rd session	Total
Boys	8	0	0	8
Girls	13	0	0	13
Total	21	0	0	21

Objective 15. While visiting a strip mine, the student will construct a diagram indicating pit, streams, replanting.*

	1st session	2nd session	3rd session	Total
Boys	0	0	0	0
Girls	0	0	0	0
Total	0	0	0	0

Objective 16. The student will participate with a group in the construction of a terrarium which simulates a particular environment.*

	1st session	2nd session	3rd session	Total
Boys	15	0	1	16
Girls	15	2	1	18
Total	30	2	2	34

*Quoted from project application.

TABLE 1 (contd.)

Objective 17. The student will collect a water sample in a manner acceptable for testing.*

	1st session	2nd session	3rd session	Total
Boys	28	39	58	125
Girls	37	38	28	103
Total	65	77	86	228

Objective 18. Given instruction and indicator test paper, the student will test water for pH.*

	1st session	2nd session	3rd session	Total
Boys	30	43	60	133
Girls	38	41	29	108
Total	68	84	89	241

Objective 19. Given instructions and a pH meter, the student will test water for pH.*

	1st session	2nd session	3rd session	Total
Boys	2	1	5	8
Girls	4	0	1	5
Total	6	1	6	13

Objective 20. By looking at water from a pond with a microscope, the student will describe what is seen.*

	1st session	2nd session	3rd session	Total
Boys	21	34	61	116
Girls	20	34	29	83
Total	41	68	90	199

*Quoted from project application.

TABLE 1 (contd.)

Objective 21. The student will tell about life forms (plant and animal) seen at the pond site and describe relationship. (Food chains, man's intrusion.)*

	1st session	2nd session	3rd session	Total
Boys	19	16	38	73
Girls	19	11	18	48
Total	38	27	56	121

Objective 22. The student will participate with a group in preparation of an aquarium.*

	1st session	2nd session	3rd session	Total
Boys	1	0	0	1
Girls	1	4	0	5
Total	2	4	0	6

Objective 23. After being transported to a plot known to contain many fossils on the surface, the student will find a fossil.*

	1st session	2nd session	3rd session	Total
Boys	36	5	1	42
Girls	39	9	0	48
Total	75	14	1	90

Objective 24. From a collection of fossils found on field trips, the student will classify one or more fossils by type of plant or animal.*

	1st session	2nd session	3rd session	Total
Boys	21	0	3	24
Girls	9	1	1	11
Total	30	1	4	35

*Quoted from project application.

TABLE 1 (contd.)

Objective 25. Given an assortment of ten rocks and minerals, learner will sort them into three or more groups based upon characteristics such as color, texture, hardness, etc.*

	1st session	2nd session	3rd session	Total
Boys	0	13	40	53
Girls	0	19	15	34
Total	0	32	55	87

Objective 26. Given an assortment of more than 20 rocks and minerals, the student will sort them into four or more groups based upon characteristics such as color, texture, hardness, etc.*

	1st session	2nd session	3rd session	Total
Boys	0	0	31	31
Girls	1	0	10	11
Total	1	0	41	42

Objective 27. After a visit to Penns Cave, the student will participate in a group discussion, telling about characteristics of caves.*

	1st session	2nd session	3rd session	Total
Boys	37	14	0	51
Girls	23	17	0	40
Total	60	31	0	91

Objective 28. The student will participate in a group discussion and listing of polluting things seen on field trips.*

	1st session	2nd session	3rd session	Total
Boys	31	25	36	92
Girls	20	27	22	69
Total	51	52	58	161

*Quoted from project application.

Achievement of Objectives in Arts and Crafts

Participants will be allowed to select arts and crafts projects. All children are expected to achieve some of the objectives stated below. Due to the many field trips and other activities, no student will be expected to complete all listed projects.*

Table 2 consists of statements of specific arts and crafts objectives and the number of boys and girls who achieved each objective. A copy of the "Arts and Crafts Achievement" check sheet has been presented in Appendix A, Evaluation Instruments.

TABLE 2

ARTS AND CRAFTS ACHIEVEMENT

Objective 1. Given the needed tools and material, the learner will make a hand-tooled leather identification tag.*

	1st session	2nd session	3rd session	Total
Boys	46	42	46	134
Girls	44	43	28	115
Total	90	85	74	249

Objective 2. Given a prepared stencil, the learner will print a design on a shirt using the silk screen process.*

	1st session	2nd session	3rd session	Total
Boys	46	42	29	117
Girls	44	34	61	139
Total	90	76	90	256

*Quoted from project application.

Objective 3. With assistance, if necessary, the learner will cut a simple stencil and print it using the silk screen process.*

	1st session	2nd session	3rd session	Total
Boys	45	0	1	46
Girls	44	0	0	44
Total	89	0	1	90

Objective 4. The learner will make a plastic paperweight with a fossil, insect or other items collected on a nature trip.*

	1st session	2nd session	3rd session	Total
Boys	0	11	28	39
Girls	0	6	23	29
Total	0	17	51	68

Objective 5. The learner will make a clay project using natural objects obtained during field activities for designing and/or texturing.* (Deleted from program due to time limitations)

Objective 6. The learner will make leaf prints by various methods.* (Deleted from program due to time limitations)

Objective 7. Given instruction and assistance, the learner will make an acrylic painting on a masonite board.*

	1st session	2nd session	3rd session	Total
Boys	46	39	46	131
Girls	44	37	32	113
Total	90	76	78	244

*Quoted from project application.

Objective 8. Provided with leather, tools, and appropriate group and individual instruction, the learner will construct a coin purse or key case with hand tooled designs symbolic of plant life.*

	1st session	2nd session	3rd session	Total
Boys	46	39	40	125
Girls	44	37	29	110
Total	90	76	69	235

Objective 9. Provided with leather, tools, and appropriate instruction, the learner will construct a belt tooled with designs symbolic of natural environment.*

	1st session	2nd session	3rd session	Total
Boys	46	38	42	126
Girls	44	37	37	118
Total	90	75	79	244

Objective 10. Provided with appropriate materials and instruction, the learner will weave a project on a cardboard loom.*

	1st session	2nd session	3rd session	Total
Boys	0	31	45	76
Girls	0	32	35	67
Total	0	63	80	143

Objective 11. The learner will construct a tissue-paper collage.*

	1st session	2nd session	3rd session	Total
Boys	0	15	36	51
Girls	0	9	26	35
Total	0	24	62	86

*Quoted from project application.

Achievement of Recreation and Social Objectives

It is hoped that through recreation activities the students will develop improved self-concepts and increase their social self-confidence. By receiving individual coaching in archery, badminton, bowling, and golf, it is expected that the accompanying sense of increased skill mastery will generate improved self-concepts and the social interaction inherent in the activities selected will reinforce social acquaintances and generate social self-confidence.*

Objective:

On a self-appraisal instrument designed to reflect personal opinions of one's competencies and abilities in selected activities, the students will rate themselves higher on the posttest than on the pretest. (Skills on the self-appraisal instrument will include archery, golf, bowling, badminton, and general athletic ability.)*

The data for each participant relative to this objective is presented by session in Table 3 for session one, Table 4 for the second session, and Table 5 for the third session. Table 6 presents information from Tables 3, 4, and 5 along with the results of the Sign Test for determining the probability that changes occurred because of chance variation. For this type of study .05 has been selected as an appropriate probability to use as the level of significance. Using the .05 criterion, only golf, bowling, and archery skills provided increased self-confidence. In four items, the observed scores changed in the unanticipated direction, but in each instance of regression the differences were not significant at the .05 level and are therefore inconclusive.

In Tables 3, 4, 5, and 6 the data was tabulated by an individual and reflects the variations between responses on the pretest and responses on the posttest. Table 7 uses the same data but has been presented in a different manner. Table 7 contains the percentage of students who rated

*Quoted from project application.

TABLE 3

CHANGES IN SELF-APPRAISAL DURING FIRST SESSION

Participant	Social Adjustment		Personality		Popularity		Ability to Learn		Ability at Games		Athletic Ability		Archery Skill		Badminton Skill		Bowling Skill		Golfing Skill	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
1	3	0	3	0	3	0	3	0	3	0	3	0	3	4	4	3	3	0	3	0
2	3	3	3	3	3	3	2	4	3	4	3	2	2	3	3	3	3	4	2	3
3	4	5	5	2	3	5	4	3	3	5	5	4	2	5	5	5	5	3	4	4
4	4	3	3	3	3	3	4	3	3	3	4	2	2	3	2	2	3	4	2	3
5	5	4	4	3	3	3	4	3	3	3	2	2	1	4	5	4	2	4	4	0
6	5	5	5	2	4	5	5	5	5	5	5	2	5	3	3	3	3	4	3	0
7	5	0	5	5	4	5	4	0	2	2	3	3	5	5	5	5	5	5	5	0
8	4	2	2	4	4	2	4	5	3	3	3	4	2	2	2	2	4	4	3	-
9	3	3	3	3	3	3	5	4	3	3	3	3	3	5	3	3	4	4	3	0
10	4	3	3	3	3	3	4	4	4	3	4	3	5	4	2	4	4	4	3	0
11	4	0	3	4	3	3	4	0	3	4	3	3	5	4	3	4	4	3	3	0
12	5	3	4	3	4	3	5	4	3	4	4	4	5	5	4	4	4	3	4	0
13	3	3	3	4	3	3	3	0	3	4	3	3	3	2	3	3	3	3	3	0
14	5	3	3	4	3	3	3	0	3	4	3	3	4	0	3	3	4	4	3	0
15	3	3	3	3	5	3	2	3	3	3	3	3	3	3	3	3	4	3	3	0
16	4	3	3	4	3	3	3	0	3	3	3	3	2	3	3	3	4	3	3	0
17	3	3	3	3	3	3	3	0	3	3	3	3	3	2	3	3	3	3	3	0
18	3	3	2	3	3	3	3	0	4	3	4	3	2	3	3	3	4	4	3	0
19	3	5	4	2	5	5	3	0	5	4	4	4	5	3	3	2	2	2	3	-
20	5	4	3	3	5	5	3	0	4	3	5	3	3	3	4	4	5	5	3	0
21	3	3	3	3	4	3	3	0	4	3	4	4	2	3	4	4	3	3	3	0
22	4	5	1	3	3	3	5	0	5	4	4	4	3	2	4	5	5	3	1	-
23	4	4	3	3	3	3	4	0	3	3	3	3	3	5	3	4	4	5	2	4
24	5	3	4	3	3	3	4	0	3	3	3	3	2	5	3	3	3	3	2	0
25	2	4	3	3	2	3	3	0	4	3	3	3	4	3	5	3	3	3	2	3
26	3	3	4	4	3	3	5	4	3	3	2	3	3	4	4	5	4	2	2	5

(TABLE 3 continued)

	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
Participant	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
27	3 4 3 +	4 4 0	5 3 3 -	5 4 3 -	3 3 4 0	3 3 3 0	3 3 3 0	2 4 4 0	3 3 1 0	3 3 1 0
28	4 3 3 -	3 3 3 0	3 3 4 +	3 3 3 0	3 3 4 +	3 3 4 +	1 1 0 0	4 4 4 0	1 3 3 0	1 2 4 +
29	3 3 0 0	5 4 3 -	4 4 0 +	3 3 3 0	3 3 3 0	4 3 3 -	2 3 3 +	3 2 2 -	2 2 0 0	2 3 2 -
30	4 5 +	3 3 3 0	3 3 4 +	3 3 3 0	5 5 0 0	3 3 3 0	2 3 3 +	5 5 0 0	4 3 3 -	3 3 3 0
31	3 3 0 0	3 3 3 0	3 3 4 +	3 3 3 0	3 3 3 0	1 1 0 0	3 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0
32	3 2 3 0	5 5 0 0	2 3 3 +	5 2 3 0	3 1 3 0	4 4 0 0	3 3 3 0	2 5 4 0	4 5 5 0	3 3 3 0
33	4 4 0 0	3 3 3 0	3 3 3 0	3 3 4 +	4 4 0 0	4 4 0 0	4 3 3 -	4 4 4 +	5 5 0 0	3 3 3 0
34	3 4 4 +	3 3 3 0	3 3 3 0	3 3 4 +	4 4 0 0	4 4 0 0	4 3 3 -	3 4 4 +	2 3 3 +	4 4 0 0
35	3 3 0 0	3 3 3 0	3 3 3 0	3 3 4 +	4 4 0 0	4 4 0 0	2 3 3 +	2 5 4 +	5 5 0 0	4 4 0 0
36	4 4 0 0	4 5 +	4 4 0 0	3 3 4 +	4 2 3 -	4 3 3 0	4 4 0 0	4 5 4 +	4 4 0 0	4 4 0 0
37	3 3 0 0	3 3 3 0	3 3 3 0	3 3 4 +	4 3 3 -	4 3 3 0	4 4 0 0	4 5 4 +	4 4 0 0	4 4 0 0
38	4 3 3 0	3 3 3 0	3 3 3 0	3 3 4 +	4 3 3 -	4 3 3 0	4 4 0 0	4 5 4 +	4 4 0 0	4 4 0 0
39	3 3 0 0	3 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0	2 2 0 0	2 3 3 0	1 3 3 0	3 3 3 0	3 3 3 0
40	3 3 0 0	3 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0	4 4 0 0	3 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0
41	5 4 -	5 3 -	5 5 0 0	4 5 +	3 4 +	3 4 +	4 3 3 -	5 2 3 0	5 5 0 0	2 3 3 +
42	3 3 0 0	4 3 -	3 3 3 0	4 4 0 0	3 4 +	3 3 3 0	3 3 3 0	3 3 3 0	2 3 3 +	2 4 3 +
43	5 5 0 0	4 4 0 0	4 4 0 0	5 3 -	5 5 0 0	4 5 +	5 4 -	3 5 4 +	3 5 4 +	3 4 4 +
44	4 4 0 0	5 4 -	5 4 -	3 4 +	4 4 0 0	4 4 0 0	3 4 4 +	3 5 4 +	3 3 3 0	3 4 4 +
45	3 3 0 0	3 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0	2 2 0 0	3 3 3 0	3 3 3 0	2 2 0 0
46	5 5 0 0	4 5 +	4 5 +	5 5 0 0	5 4 -	3 5 0 0	3 5 0 0	3 5 4 +	3 5 4 +	2 4 4 +
47	2 2 0 0	4 3 -	3 3 3 0	5 4 -	5 3 3 0	3 3 3 0	3 3 3 0	3 3 3 0	4 4 4 0	3 4 4 0
48	3 3 0 0	5 4 -	3 3 3 0	4 4 0 0	3 3 3 0	2 5 0 0	2 5 0 0	4 3 3 -	4 4 4 0	4 4 4 0
49	3 3 0 0	5 4 -	3 3 3 0	5 3 -	4 3 3 0	3 3 3 0	4 3 3 -	4 3 3 -	5 5 0 0	2 4 4 +
50	3 4 +	3 3 3 0	4 4 0 0	4 3 -	3 3 3 0	4 4 0 0	4 4 0 0	4 3 3 -	4 4 4 0	2 4 4 +
51	3 3 0 0	3 3 3 0	3 3 3 0	4 3 -	3 3 3 0	4 4 0 0	4 4 0 0	4 3 3 -	4 4 4 0	2 4 4 +
52	4 4 0 0	4 4 0 0	4 5 +	5 5 0 0	4 5 +	4 4 0 0	4 3 3 -	3 5 4 +	5 5 0 0	3 3 3 0

(TABLE 3 continued)

Participant	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
54	3 0	3 4	4 3	3 2	4 3	4 3	4 4	2 3	3 0	1 0
55	3 3	3 3	3 3	3 3	3 4	3 3	4 2	3 4	3 3	1 3
56	4 5	3 5	3 5	4 5	4 5	4 5	3 2	2 5	2 5	2 5
57	3 4	3 4	3 4	3 4	4 4	3 4	3 4	4 4	3 4	2 3
58	2 4	3 3	3 3	3 2	4 3	5 4	4 3	4 3	3 4	2 2
59	3 4	4 3	3 3	4 0	5 5	3 3	2 2	4 0	3 4	2 3
60	3 5	4 3	3 5	3 0	5 3	5 3	4 4	3 0	3 2	3 4
61	3 3	3 3	3 3	3 0	3 3	3 3	3 0	3 0	3 3	3 3
62	3 3	3 4	3 3	3 3	3 4	3 3	4 4	3 4	3 4	2 3
63	3 3	4 3	3 4	3 4	3 3	3 4	3 4	3 0	4 4	2 3
64	4 4	4 4	4 4	4 0	4 4	2 4	4 4	3 0	4 4	2 3
65	3 4	3 3	4 3	3 0	4 4	4 4	3 4	4 0	4 4	4 4
66	3 3	3 3	3 3	3 0	4 3	4 3	3 3	4 0	5 4	4 1
67	3 3	3 3	3 3	3 0	3 4	2 3	3 3	3 0	3 3	3 3
68	4 3	4 4	3 4	3 4	3 3	4 3	3 4	4 0	3 3	3 3
69	4 4	3 3	3 3	3 3	3 3	3 3	3 2	3 0	3 3	4 2
70	4 3	3 3	3 4	3 4	4 3	3 5	2 5	4 0	2 4	1 3
71	3 3	3 3	3 3	4 0	4 3	3 4	3 3	3 0	4 3	4 4
72	3 3	3 3	3 3	4 0	4 3	3 4	3 3	3 0	4 3	3 3
73	2 2	5 2	3 3	5 0	5 5	5 5	5 5	5 0	5 5	5 5
74	3 3	4 3	4 3	3 0	3 4	3 3	4 2	3 0	3 3	3 3
75	2 3	3 2	3 4	3 0	2 4	3 3	5 3	4 0	1 5	3 3
76	3 2	3 3	3 3	3 0	2 3	2 2	3 3	1 0	3 3	2 3
77	3 3	3 3	3 3	3 0	4 4	3 4	3 3	4 0	3 4	3 4
78	5 3	5 3	3 3	3 0	4 4	5 4	5 4	5 0	5 5	5 4

TABLE 4

CHANGES IN SELF-APPRAISAL DURING SECOND SESSION

Participant	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
1	3	3	3	3	3	3	2	2	2	3
2	3	4	3	3	4	3	3	4	3	3
3	4	3	2	3	4	2	4	3	3	2
4	4	3	4	5	3	4	3	3	3	2
5	4	3	5	2	3	5	3	3	3	1
6	3	4	3	3	3	3	3	4	4	4
7	3	2	3	3	4	4	3	4	2	3
8	3	3	3	4	3	3	3	3	3	3
9	4	3	3	3	4	2	3	2	3	3
10	3	4	2	3	3	4	3	4	3	2
11	5	3	3	3	3	2	5	4	3	2
12	3	3	3	3	1	2	3	2	5	3
13	3	3	3	3	3	3	3	2	2	2
14	4	3	4	4	5	4	4	3	4	2
15	3	3	3	2	3	5	2	3	5	4
16	4	3	4	2	5	3	4	3	4	2
17	5	4	4	4	4	5	4	5	4	4
18	3	3	3	4	4	3	3	4	4	2
19	4	3	4	3	3	5	2	3	3	4
20	3	3	2	3	3	2	2	3	2	2
21	5	4	4	4	5	5	3	4	4	4
22	3	3	4	3	4	3	3	3	2	2
23	3	3	3	3	3	3	2	3	1	1
24	4	5	3	4	4	4	2	3	4	2
25	5	4	5	4	5	5	5	5	5	1
26	3	3	4	4	2	3	4	2	3	3

(TABLE 4 continued)

Participant	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
27	3 0	3 4 +	4 4 0	4 3 -	3 3 0	3 3 0	3 3 0	4 3 -	3 3 0	4 2 -
28	4 4 0	3 3 0	4 4 0	5 3 -	3 3 0	3 4 +	3 3 0	3 2 3	3 3 0	4 3 0
29	4 3 -	4 3 -	3 3 0	4 4 0	3 3 0	3 3 0	4 5 +	4 3 0	4 4 0	3 3 0
30	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0	2 2 0	3 2 2	3 3 0	4 4 0
31	5 4 -	3 3 0	5 4 -	3 3 0	4 4 0	4 5 +	3 3 0	4 4 0	4 3 -	4 4 0
32	4 3 -	3 3 0	4 3 -	3 3 0	4 4 0	4 5 +	3 3 0	4 4 0	4 3 -	4 4 0
33	3 3 0	3 3 0	3 3 0	2 2 0	4 4 0	4 5 +	4 5 +	4 4 0	4 5 +	4 4 0
34	4 3 -	4 4 0	3 3 0	3 3 0	3 4 +	4 4 0	3 3 0	4 4 0	3 3 0	4 4 0
35	2 3 +	4 4 0	3 3 0	3 3 0	5 3 -	4 4 0	3 3 0	4 4 0	3 3 0	4 4 0
36	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0	3 5 +	3 3 0	2 3 3	4 2 -	1 3 3
37	3 4 +	3 3 0	3 3 0	3 3 0	3 4 +	3 3 0	3 4 +	4 4 0	3 3 0	3 3 0
38	3 3 0	2 3 +	2 3 0	3 3 0	2 2 0	4 3 -	3 3 0	4 4 0	2 2 0	3 3 0
39	3 3 0	3 2 -	3 3 0	4 3 -	4 4 0	4 4 0	3 3 0	1 1 0	1 1 0	1 1 0
40	4 3 -	3 4 +	5 4 -	5 5 0	4 3 -	4 3 -	3 4 +	4 3 3	3 4 +	3 3 0
41	3 3 0	3 3 0	3 3 0	3 3 0	4 4 0	3 3 0	2 3 0	3 3 0	4 3 3	3 3 0
42	2 5 +	1 3 +	5 3 -	4 2 -	4 4 0	5 4 -	4 4 0	3 3 0	3 4 3	1 1 0
43	3 3 0	3 2 -	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0	3 2 2	3 3 0
44	3 3 0	3 3 0	3 4 +	4 3 -	4 4 0	3 3 0	4 4 0	3 3 0	3 3 0	3 3 0
45	3 3 0	3 3 0	3 3 0	4 3 -	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0	3 3 0
46	3 3 0	3 3 0	3 3 0	4 3 -	4 4 0	4 4 0	4 4 0	3 3 0	5 4 3	3 3 0
47	4 3 -	4 4 0	3 3 0	4 2 -	4 4 0	1 1 0	3 3 0	3 3 0	1 3 3	1 1 0
48	4 4 0	4 4 0	2 3 +	4 2 -	4 4 0	5 4 -	4 4 0	4 4 0	4 3 3	4 3 -
49	3 5 +	4 5 +	3 1 -	4 5 +	5 4 -	5 4 -	4 4 0	5 5 0	5 5 0	1 1 0
50	5 5 0	5 4 -	4 5 +	1 3 +	5 5 0	5 5 0	4 4 0	4 5 0	4 4 0	5 5 0
51	3 4 +	3 5 +	5 3 -	5 4 -	4 4 0	3 2 -	4 4 0	2 3 +	2 3 +	3 3 0
52	3 3 0	4 4 0	3 3 0	4 3 -	4 4 0	3 4 +	4 4 0	4 4 0	4 4 0	4 4 0
53	3 4 +	4 3 -	2 3 +	4 4 0	4 4 0	3 3 0	5 5 0	4 5 +	3 4 +	4 4 0

TABLE 5

CHANGES IN SELF-APPRAISAL DURING THIRD SESSION

Participant	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
1	34	33	33	33	33	33	23	22	33	34
2	43	33	33	33	35	44	44	33	33	44
3	30	30	30	30	30	43	44	30	30	40
4	33	33	33	33	33	23	32	33	33	33
5	43	33	33	33	33	23	12	33	32	23
6	33	33	33	33	22	22	33	12	12	12
7	40	40	40	40	44	44	34	34	34	33
8	30	30	30	30	40	44	44	34	40	20
9	35	44	35	34	22	33	24	43	33	43
10	40	44	40	34	44	33	33	54	43	22
11	40	43	40	33	34	34	33	34	33	44
12	30	33	30	33	33	33	44	34	34	23
13	54	43	40	43	34	33	43	34	24	44
14	30	33	30	33	33	33	33	33	24	22
15	30	43	30	33	33	43	33	42	23	22
16	30	33	30	33	52	33	33	43	34	22
17	40	33	40	44	35	45	21	33	13	55
18	30	33	30	34	33	44	22	33	13	22
19	43	33	43	33	44	33	21	44	23	33
20	32	33	32	33	31	33	34	35	23	33
21	33	33	33	33	44	33	31	23	33	45
22	40	33	40	33	33	44	33	22	13	23
23	40	33	40	33	44	33	33	23	53	33
24	30	33	30	33	33	44	22	42	34	22
25	33	33	33	33	33	22	22	22	23	22
26	54	44	44	45	44	34	45	24	34	33

(TABLE 5 continued)

Participant	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
27	3 0	3 0	3 0	4 0	4 3	3 0	4 2	3 0	3 0	5 0
28	3 3	3 3	3 3	4 3	4 3	3 3	5 4	3 4	3 4	3 3
29	3 0	3 3	3 0	4 4	3 3	3 0	2 2	3 0	3 2	2 3
30	3 3	3 3	3 0	4 4	4 4	3 0	3 3	3 4	3 4	2 4
31	5 4	5 4	4 5	5 5	4 5	4 0	3 4	3 4	5 5	4 5
32	3 3	3 3	3 0	1 3	3 3	3 0	1 3	1 2	1 2	1 1
33	3 4	3 3	3 0	3 3	3 3	3 0	4 3	4 4	1 3	1 2
34	3 4	3 5	3 0	4 4	2 5	3 0	2 4	4 4	3 3	2 5
35	4 3	3 3	3 0	4 4	3 3	3 0	3 3	3 3	3 3	3 3
36	3 3	4 3	3 0	4 3	3 3	3 0	4 3	3 3	4 3	3 3
37	4 4	3 4	3 0	3 3	4 3	3 0	2 4	3 4	2 3	2 3
38	5 4	2 3	3 0	4 3	4 2	3 0	2 4	5 3	2 5	4 3
39	3 3	4 3	3 0	3 4	5 5	3 0	3 3	2 2	3 4	1 4
40	4 4	4 3	3 0	4 4	4 3	3 0	2 2	4 4	3 5	2 3
41	5 5	3 4	3 0	4 3	3 4	3 0	3 4	4 4	3 3	2 4
42	3 3	3 3	3 0	3 3	4 3	3 0	2 3	1 3	2 3	2 3
43	3 2	3 1	3 0	3 2	3 4	3 0	2 1	4 4	2 3	1 2
44	3 3	3 3	3 0	3 3	3 3	3 0	2 2	3 3	2 3	2 2
45	3 3	3 3	3 0	3 3	3 3	3 0	2 2	3 3	2 2	2 2
46	4 4	3 3	3 0	5 4	3 3	3 0	4 4	3 3	4 3	2 2
47	3 3	3 3	3 0	3 3	3 3	3 0	4 3	3 3	1 2	4 3
48	4 3	3 3	3 0	4 3	4 3	3 0	3 4	4 3	3 3	5 3
49	4 3	3 3	3 0	4 3	3 3	3 0	3 3	2 2	3 3	3 3
50	5 5	3 3	3 0	3 3	3 3	3 0	2 3	3 3	2 2	2 2
51	3 3	4 3	3 0	4 3	3 3	3 0	2 2	3 3	2 3	3 3
52	4 3	3 3	3 0	4 3	3 3	3 0	3 3	3 3	1 3	1 3

(TABLE 5 continued)

Participant	Social Adjustment	Personality	Popularity	Ability to Learn	Ability at Games	Athletic Ability	Archery Skill	Badminton Skill	Bowling Skill	Golfing Skill
	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign	Before After Sign
53	43	33	33	33	44	33	33	55	33	33
54	34	34	33	34	45	34	33	35	33	33
55	44	43	43	44	33	43	33	43	23	24
56	43	33	33	33	43	34	34	53	34	24
57	33	33	33	33	33	33	32	22	22	22
58	33	33	33	22	23	43	13	33	32	21
59	45	34	33	33	33	33	22	33	23	22
60	33	33	33	33	33	33	44	33	33	33
61	55	44	33	55	43	44	33	44	43	34
62	55	45	54	55	35	44	35	54	44	33
63	55	44	44	35	55	33	43	55	22	11
64	44	33	44	43	53	53	34	43	54	43
65	33	33	33	33	33	23	23	33	23	13
66	44	44	34	44	44	34	34	43	55	35
67	34	43	43	44	33	33	22	22	43	43
68	44	33	43	44	43	44	55	45	43	33
69	33	33	33	33	33	33	33	44	44	22
70	34	33	33	33	33	33	33	22	33	22
71	43	54	43	44	34	33	33	43	55	34
72	33	33	33	33	33	33	44	22	11	33
73	33	23	33	23	33	33	22	33	11	22
74	35	33	33	34	23	34	41	11	33	11

TABLE 6

RESULTS OF DIFFERENCES VIA SIGN TEST ON SELF-APPRAISAL
PRETEST AND POSTTEST FOR EEE CAMP PARTICIPANTS

	Improve	Regress	x	N	P
Compared to most boys and girls my age, I get along with other students	39	44	39	83	.20
Compared to most students my age, my personality is	36	43	36	79	.26
Compared to most students my age, people like me	44	32	32	76	.11
Compared to most students my age, I can learn	38	50	38	88	.13
Compared to most students my age, my ability to play games is	39	54	39	93	.08
Compared to most students my age and sex, my athletic ability is	47	41	41	88	.30
Compared to most students my age, my ability at archery is	67	39	39	106	.005
Compared to most students my age, I can play badminton	55	43	43	98	.14
Compared to other students my age, I can bowl	73	41	41	114	.002
Compared to most students my age, I can play golf	76	29	29	105	.001

x = the smaller number of changes (improvement or regression)

N = total number of changes. The number who show no change do not affect the outcome of the Sign Test.

P = probability that changes are due to chance variation rather than some systematic effect. In other words, it is the probability of rejecting H_0 , the hypothesis of no difference between the pre and posttest results.

TABLE 7

PERCENTAGE OF PARTICIPANTS WHO RATED THEMSELVES BETTER OR MUCH BETTER THAN MOST BOYS AND GIRLS THEIR AGE*

	On First Day of 3E Camp	On Last Day of 3E Camp
	%	%
Compared to most boys and girls my age, I get along with other students	40	40
Compared to most students my age, my personality is	31	28
Compared to most students my age, people like me	26	29
Compared to most students my age, I can learn	45	40
Compared to most students my age, my ability to play games is	45	39
Compared to most students my age and sex, my athletic ability is	36	40
Compared to most students my age, my ability at archery is	29	39
Compared to most students my age, I can play badminton	36	40
Compared to other students my age, I can bowl	34	40
Compared to most students my age, I can play golf	21	32

*This data is based upon responses on the Self-Appraisal Instrument administered to 205 participants on the first day and again on the final day of each session.

themselves "better" or "much better" on each test. Rather than presenting data about individuals, Table 7 presents comparisons between the group of participants on the first day and on the final day.

By the nature of participant selection (children identified as "educationally disadvantaged" according to ESEA Title I guidelines) it was anticipated that less than half of the children would rate themselves above average on any of the ten scales. On the pretest forty-five percent of the children ranked themselves above average in ability to learn and in ability to play games. On the posttest only forty percent and 39 percent respectively ranked themselves above average.

The next highest response in the self-confident categories related to getting along with other students in which 40 percent so indicated on both the pre and posttests. All other items contained less than 40 percent of responses in the self-confident categories on the pretest and no more than 40 percent on the posttest. In this percentage or "eye ball" analysis six characteristics showed an increase in the number who responded with self-confidence; one characteristic showed no change; and three characteristics showed regression.

While the data from the pre- post self-appraisal instrument have been treated by two different methods of analysis, the results are quite similar. In the general personal-social characteristics (adjustment, personality, popularity, learning, and game playing) the groups in general did not become more self-confident and did not improve in their self-appraisal. That part of the recreation goal "increase social self-confidence" was not achieved according to the data of this investigation. In the skills stated in the objectives for recreation activities (athletics, archery, badminton, bowling, and golf) the groups did increase in their self-appraisal. It is

therefore concluded from the evidence of this study that the objective of "improved self-concept... (from an) accompanying sense of increased skill mastery" did occur.

On the self-appraisal instrument designed to reflect personal opinions of one's competencies and abilities in selected activities the students did in fact rate themselves higher on the posttest than on the pretest in being liked by others (popularity), athletic ability, archery, badminton, bowling, and golf. These same participants did not rate themselves higher on the posttest relative to getting along with others (social adjustment), personality, ability to learn, or ability to play games. The results of this study were found to be statistically significant at the .05 level for improved confidence in archery, bowling, and golf.

The Five Statement Test was used to measure satisfaction of the camp participants. One of the problems of questionnaire construction is that of requesting information without providing clues as to the expected answer. The writer conducted an extensive search for a questionnaire technique to retrieve pupil opinion in an unbiassing manner. Of the many opinionnaires and opinion surveys found none met this criterion. A parallel search for ways to measure self-attitudes, self-esteem, and concepts turned up the Twenty Statements Test designed to elicit subjects' self-attitudes. The TST consists of simply asking the respondent to make twenty different statements in answer to the single question, "Who am I?" addressed to himself. Responses tended to fall into a few general categories. It appeared that the first statement tended to be most important and the twentieth or last statement tended to be least important.

To adapt this technique for evaluation purposes the technique was modified to ask the respondent to complete the sentence "EEE camp has been _____," five times. It was necessary to establish categories into which to tabulate student responses. After several trials it was decided that responses could be meaningfully classified into the following categories: expressions of positive feelings (approval) such as "fun," enjoyable; statements of achievement or accomplishment such as "learning to swim" or "reading books"; neutral or unclassifiable; criticisms or suggestions such as "too hot" or "too many rules"; and statements of negative feelings or rejection such as "boring" or "for the birds."

While use of the classification scheme does not utilize the specific information for planning future programs, it does permit data reduction which enhances making judgments about the program in question in terms of students' satisfaction.

The Five Statements Test was administered on the final day of each session. The results are presented in Tables 8, 9, and 10. Table 8 shows that there were virtually no criticisms or negative statements. The first responses tended to fall markedly into the emotional or feeling statements category which indicated approval. The second through the fifth statements still tended to be indications of approval, but there was quite an increase in the statements of achievement and accomplishment. The data from the Five Statements Test is evidence that the participants were very satisfied with the Brookville EEE camp.

TABLE 8

STUDENTS' FIVE STATEMENTS IN RESPONSE TO
"EEE CAMP HAS BEEN: _____."

Types of Statements	Order of Response				
	1st %	2nd %	3rd %	4th %	5th %
Expression of Approval	86	62	67	54	59
Mention of Activity or Achievement	12	34	26	31	27
No Answer or Neutral Comment	2	2	6	10	14
Criticism or Suggestion	1	1	0	0	0
Expression of Disapproval	1	2	2	4	1
Total	102*	101*	101*	99*	101*
(No. Cases)	(248)	(248)	(248)	(248)	(248)

*Rounding Error.

TABLE 9

COMPARISON OF RESPONSES OF AGE GROUPS TO
"EEE CAMP HAS BEEN: _____."

Types of Statements	Age Group			
	8-9 %	10 %	11 %	12-13+ %
Expression of Approval	78	66	55	65
Mention of Activity or Achievement	16	25	34	25
No Answer or Neutral Comment	4	6	9	8
Criticism or Suggestion	0	0	0	1
Expression of Disapproval	2	3	2	2
Total	100	100	100	101*
(Total Responses)	(215)	(355)	(285)	(380)

*Rounding Error.

The eight and nine year olds tended to respond in terms of feelings and statements of approval. Eleven year olds placed a greater emphasis upon statements of activity or achievement than did the younger and older participants (see Table 9).

The only difference between boys' statements and girls' statements about the program or shown in Table 10 is that girls tended to be just a bit more neutral and boys tended to state achievement and activities more than girls.

TABLE 10
COMPARISON OF RESPONSES BETWEEN BOYS AND GIRLS TO
"EEE CAMP HAS BEEN: _____."

Types of Statements	Boys %	Girls %
Expression of Approval	66	65
Mention of Activity or Achievement	28	22
No Answer or Neutral Comment	3	9
Criticism or Suggestion	0	1
Expression of Disapproval	2	2
Total	99*	99*
(No. Children)	(137)	(108)
(No. Responses)	(685)	(540)

*Rounding Error.

Objective:

At the conclusion of the two weeks, students will indicate that they enjoyed the recreation and group singing.*

The data in Table 11, "Percentage of Participants' Positive and Negative Opinions Relative to EEE Camp" is a summary of the tabulations of the ten "yes-no" items on the Student Opinion Survey. Ninety-nine percent of the campers indicated that EEE camp had been enjoyable; ninety-eight percent checked that it was more enjoyable than regular school.

In response to item 8 "Did you enjoy the group singing?" eighty-five percent checked "yes."

Objective:

At the conclusion of the two weeks, students will indicate that they have participated in social interaction by responding affirmatively to the question, "Have you made new friends at EEE camp?"*

The evaluator inadvertently omitted collection of data to measure this objective. The participants were asked "Did you get along well with the other students?" Item 7 in Table 11 presents their responses. Ninety-two percent of the 245 campers checked "yes."

*Quoted from project application.

TABLE 11

PERCENTAGE OF PARTICIPANTS' POSITIVE AND NEGATIVE
OPINIONS RELATIVE TO EEE CAMP

Item 1. Has the EEE summer camp been enjoyable?

	1st session	2nd session	3rd session	Total
Yes %	99	100	99	99
No %	1	0	1	1
(No. Cases)	(91)	(76)	(81)	(248)

Item 2. Has it been more enjoyable than regular school?

	1st session	2nd session	3rd session	Total
Yes %	98	99	96	98
No %	2	1	4	2
(No. Cases)	(91)	(76)	(81)	(248)

Item 3. Was the food good during EEE Camp?

	1st session	2nd session	3rd session	Total
Yes %	94	95	90	93
No %	6	5	10	7
(No. Cases)	(89)	(76)	(81)	(246)

Item 4. Did you get enough to eat?

	1st session	2nd session	3rd session	Total
Yes %	93	95	98	95
No %	7	5	2	5
(No. Cases)	(89)	(76)	(81)	(246)

(TABLE 11 continued)

Item 5. Did you learn more than you would have learned during two weeks of regular school?

	1st session	2nd session	3rd session	Total
Yes %	76	83	86	81
No %	24	17	14	19
(No. Cases)	(87)	(75)	(81)	(244)

Item 6. Do you think that the EEE camp teachers like you?

	1st session	2nd session	3rd session	Total
Yes %	94	90	93	92
No %	6	10	7	8
(No. Cases)	(90)	(76)	(81)	(247)

Item 7. Did you get along well with the other students?

	1st session	2nd session	3rd session	Total
Yes %	90	88	98	92
No %	10	12	2	8
(No. Cases)	(88)	(76)	(81)	(245)

Item 8. Did you enjoy the group singing?

	1st session	2nd session	3rd session	Total
Yes %	82	90	86	85
No %	18	10	14	15
(No. Cases)	(89)	(76)	(81)	(246)

(TABLE 11 continued)

Item 9. Were you given a chance to work on the EEE camp newspaper?

	1st session	2nd session	3rd session	Total
Yes %	59	64	84	68
No %	41	36	16	32
(No. Cases)	(90)	(76)	(81)	(247)

Item 10. Would you like to attend another camp like this one next summer

	1st session	2nd session	3rd session	Total
Yes %	95	95	87	92
No %	5	5	13	8
(No. Cases)	(86)	(76)	(87)	(249)

PART 3: SUMMARY

Approach To This Evaluation

1. Evidence was sought relative to the extent that the objectives of the program were achieved.
2. Economy of time and money were factors considered in the selection and development of evaluation techniques. Opinion sampling and testing were minimized to cause as little disruption as possible to the on-going program.
3. This report has been written in language intended to be understandable by the general public and acceptable to persons versed in statistical methods.
4. This report has included a description of the design and techniques so that others seeking to plan or evaluate similar projects might profit from the strengths and the weaknesses of this evaluation.

While the methods of data collection used in this project may not have been ideal, it appears that most of the participants' responses were sincere representations of their thoughts and attitudes.

Written objectives are important to most educational endeavors. They give direction to activity planning and serve as the basis for evaluation of learners' progress and for judging the success of the program. Because this writer participated as a consultant in the planning of this project it was possible to restate many objectives in more specific terms. The author has found it extremely helpful for the person or persons responsible for evaluating a program to be involved in the planning stages. It is important to answer "How will you know if the objective has been achieved?" or "What will you accept as evidence of achievement of the objective?" for each of the program objectives.

Objectives should not be restrictive. In the project in question, it was necessary to modify some of the objectives, to eliminate some objectives, and to add other objectives, because of individual differences and the dynamic nature of the program.

Conclusions

Brookville modified an ESEA Title III Rural Youth Enrichment Program (which they had operated for the three consecutive years prior) to fit ESEA Title I guidelines emphasizing environmental education. Planned experiences fell into three general areas: science, arts and crafts, and recreation.

Children were selected to participate in the program who (a) needed to experience success, (b) needed to improve their self-concept, (c) needed greater awareness about environmental conditions, (d) needed to have a role in alleviating environmental problems, (e) needed to develop conservation practices, (f) needed to experience accomplishment, (g) needed to make friends and to participate in group activities, (h) needed medical and dental care, (i) needed improved nutrition, and (j) needed to know that people care about them.

In light of the data presented in this report it can be concluded that, by virtue of this project:

- (a) The participants did experience success.
- (b) Self-concepts did not raise significantly.
- (c) Many children did become much more aware of environmental conditions.
- (d) About half of the campers did have a role in alleviating environmental problems.
- (e) Conservation practices were initiated.
- (f) All participants upon whom data was collected did experience accomplishment.

- (g) Nearly all participants indicated that they did get along well with the other students and that they enjoyed participation in group activities.
- (h) The food was good and the campers did get enough to eat.
- (i) The participants felt that they were liked by the staff and nine out of ten wish to attend another such camp next summer.

The major objective was to motivate and encourage the disadvantaged student toward a more fulfilling and rewarding educational experience through activities which are currently not provided to any extent within the present school curriculum and which broaden his overall understanding of natural resources, their uses, misuses, and conservation practices.

It is the conclusion of the author that this objective has been achieved.

Observations from on-site visits and subsequent interviews with participants and teachers have produced subjective evidence which tend to support the information presented in this report.

On the self-appraisal instrument designed to reflect opinions about one's competencies and abilities in selected activities the camp students did in fact rate themselves higher on the posttest than on the pretest in being liked by others (popularity), athletic ability, archery, badminton, bowling, and golf. It seems unrealistic to expect measurable gains in established attitudes to occur during a short term summer school or camp. After attempts to measure changes in self-concepts and attitudes in several such programs, the lack of sensitivity of the various instruments has become obvious. Either activities to change self-concepts are not intensive enough or the instruments are inadequate. The author is appreciative of the difficulty of changing attitudes, self-concepts in particular, and of measuring small changes which do occur over a relatively short time span. This is not to imply that such endeavors are a waste of time, but to point out that the pre- post self-appraisal results should not be interpreted to

reflect negatively on the program. It was not surprising that seven of the ten items did not show significant differences. What is important is that statistically significant gains did occur in three self-appraisal items.

The Five Statements Test resulted in evidence that the participants were very satisfied with the Brookville EEE Camp. Social-emotional factors were most important to all age groups. Comparisons revealed that the eight to nine year olds mentioned activities and accomplishments least often. The activities and achievements were most important to the eleven year old campers as evidenced by the frequency of statements on the Five Statements Test. From this data it appears that the learning activities were best suited for eleven year olds and some activities were possibly too advanced for the younger participants and some activities failed to challenge or interest the older campers. Expressions of disapproval were less than three percent for any age group. The Brookville EEE project was equally favorable to boys and girls as indicated by comparison of their responses on the Five Statements Test.

Through planned evolution, a successfully operated Rural Youth Enrichment Program has been modified into a model for institutionalizing environmental-ecological education. It appears that this program has dealt with significant national and local problems using techniques and procedures appropriate to the needs of educationally disadvantaged students.

APPENDIX A
EVALUATION INSTRUMENTS

APPENDIX A
EVALUATION INSTRUMENTS

1. Self-Appraisal Instrument
2. Science Achievement Checklist
3. Arts and Crafts Achievement Checklist
4. Student Opinion Survey

All instruments used in the evaluation of this project were designed by the author. The Self-Appraisal Instrument is a modification of a technique used in the "Student Inventory" developed by the Central Atlantic Regional Educational Laboratory, Washington, D.C. The Five Statements Test in the Student Opinion Survey is a modification of the technique used in the Twenty Statements Test developed by M. Kuhn and T. McPartland, (Sociology Quarterly, IX, 39-55) to measure self-attitudes and personality traits.

Name _____ Age _____ Boy _____ Girl _____ Date _____

Please mark each sentence in this section in the following way:

If you feel you are better than most boys and girls your age in "throwing a ball," place a check in the space under BETTER.

MUCH BETTER BETTER THE SAME WORSZ MUCH WORSE

EXAMPLE: Compared to most students my age, I can throw a ball

If you feel you can throw a ball just about the same as most boys and girls your age, place a check under THE SAME.

EXAMPLE: Compared to most students my age, I can throw a ball

1. Compared to most boys and girls my age, I get along with other students
2. Compared to most students my age, my personality is
3. Compared to most students my age, my ability to play games is
4. Compared to most students my age, people like me
5. Compared to most students my age, I can learn
6. Compared to most students my age and sex, my athletic ability is
7. Compared to most students my age, my ability at archery is
8. Compared to most students my age, I can play badminton
9. Compared to other students my age, I can bowl
10. Compared to most students my age, I can play golf

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

SCIENCE ACHIEVEMENT

Student's Name _____ Sex _____ Age _____
Instructor In Charge _____ Session: _____

Upon successful achievement of each objective, the supervising person (aide, teacher, director, etc.) should initial the line in front of the respective objective statement. In the event that the learner only partially achieves an objective, or achieves significantly greater success than that specified, place an asterisk by your initials, make a notation of such. For example, if a student only found six insects (see objective 4) then mark as follows: D.M. 6 insects. Return these forms to the project director at the close of each session.

- _____ 1. Given appropriate materials, the student will construct an insect collecting net.
- _____ 2. Given instruction and materials, the student will prepare an insect killing jar.
- _____ 3. Given a collection of moths and butterflies, the student will differentiate between the two species with at least 80 percent accuracy.
- _____ 4. The student will find and identify ten different insects.
- _____ 5. The student will locate and identify ten different types of trees.
- _____ 6. The student will collect a soil sample in a manner acceptable for testing.
- _____ 7. Given a soil testing kit and instructions, the student will demonstrate soil testing by the processes available in the kit.
- _____ 8. The student will make an acid (sour) soil sample.
- _____ 9. The student will make a basic (sweet) soil sample.
- _____ 10. The student will participate with a group in an experiment planting grain (oat) seeds in three different soils - a field, a wood lot, a strip-mined plot.
- _____ 11. With a group, the learner will plant trees to restore land used for strip mining.
- _____ 12. In a group discussion, the learner will tell about good conservation practices seen on field trips.

- _____ 13. Given a compass, the learner will demonstrate its use to determine directions.
- _____ 14. While visiting a farm area, the learner will construct a diagram which shows direction and obvious landmarks (RR, buildings, road, stripped area, field, woods).
- _____ 15. While visiting a strip mine, the student will construct a diagram indicating pit, streams, replanting.
- _____ 16. The student will participate with a group in the construction of a terrarium which simulates a particular environment.
- _____ 17. The student will collect a water sample in a manner acceptable for testing.
- _____ 18. Given instruction and indicator test paper, the student will test water for pH.
- _____ 19. Given instructions and a pH meter, the student will test water for pH.
- _____ 20. By looking at water from a pond with a microscope, the student will describe what is seen.
- _____ 21. The student will tell about life forms (plant and animal) seen at the pond site and describe relationship. (Food chains, man's intrusion.)
- _____ 22. The student will participate with a group in preparation of an aquarium.
- _____ 23. After being transported to a plot known to contain many fossils on the surface, the student will find a fossil.
- _____ 24. From a collection of fossils found on field trips, the student will classify one or more fossils by type of plant or animal.
- _____ 25. Given an assortment of ten rocks and minerals, the learner will sort them into three or more groups based upon characteristics such as color, texture, hardness, etc.
- _____ 26. Given an assortment of more than 20 rocks and minerals, the student will sort them into four or more groups based upon characteristics such as color, texture, hardness, etc.
- _____ 27. After a visit to Penns Cave, the student will participate in a group discussion, telling about characteristics of caves.
- _____ 28. The student will participate in a group discussion and listing of polluting things seen on field trips.

ARTS AND CRAFTS ACHIEVEMENT

Student's Name _____ Sex _____ Age _____
Instructor In Charge _____ Session: _____

Upon successful achievement of each objective, the supervising person (aide, teacher, director, etcl) should initial the line in front of the respective objective statement. In the event that the learner only partially achieves an objective, or achieves significantly greater success than that specified, place an asterisk by your initials and make a notation of such. Return these forms to the project director at the close of each session.

- _____ 1. -Given the needed tools and material, the learner will make a hand-tooled leather identification tag.
- _____ 2. Given a prepared stencil, the learner will print a design on a shirt using the silk screen process.
- _____ 3. With assistance, if necessary, the learner will cut a simple stencil and print it using the silk screen process.
- _____ 4. The learner will make a plastic paperweight with a fossil, insect or other items collected on a nature trip.
- _____ 5. The learner will make a clay project using natural objects obtained during field activities for designing and/or texturing.
- _____ 6. The learner will make leaf prints by various methods.
- _____ 7. Given instruction and assistance, the learner will make an acrylic painting on a masonite board.

STUDENT OPINION SURVEY

Please fill in the information requested below. Do not sign your name. These statements are confidential. Your cooperation is important. Information from this research will be useful for future planning.

Age _____ Sex _____ Date _____

What do you think of the EEE camp in which you are now enrolled: Complete ALL five statements below.

1. EEE camp has been _____

2. EEE camp has been _____

3. EEE camp has been _____

4. EEE camp has been _____

5. EEE camp has been _____

- | | Yes | No |
|---|-------|-------|
| 1. Has the EEE summer camp been enjoyable? | _____ | _____ |
| 2. Has it been more enjoyable than regular school? | _____ | _____ |
| 3. Was the food good during EEE camp? | _____ | _____ |
| 4. Did you get enough to eat? | _____ | _____ |
| 5. Did you learn more than you would have learned during 2 weeks of regular school? | _____ | _____ |
| 6. Do you think that the EEE camp teachers like you? | _____ | _____ |
| 7. Did you get along well with the other students? | _____ | _____ |
| 8. Did you enjoy the group singing? | _____ | _____ |
| 9. Were you given a chance to work on the EEE camp newspaper? | _____ | _____ |
| 10. Would you like to attend another camp like this one next summer? | _____ | _____ |

APPENDIX B

**BROOKVILLE "3E"
THE ENVIRONMENTAL-ECOLOGICAL EDUCATION PROGRAM**

ESEA

Title 1

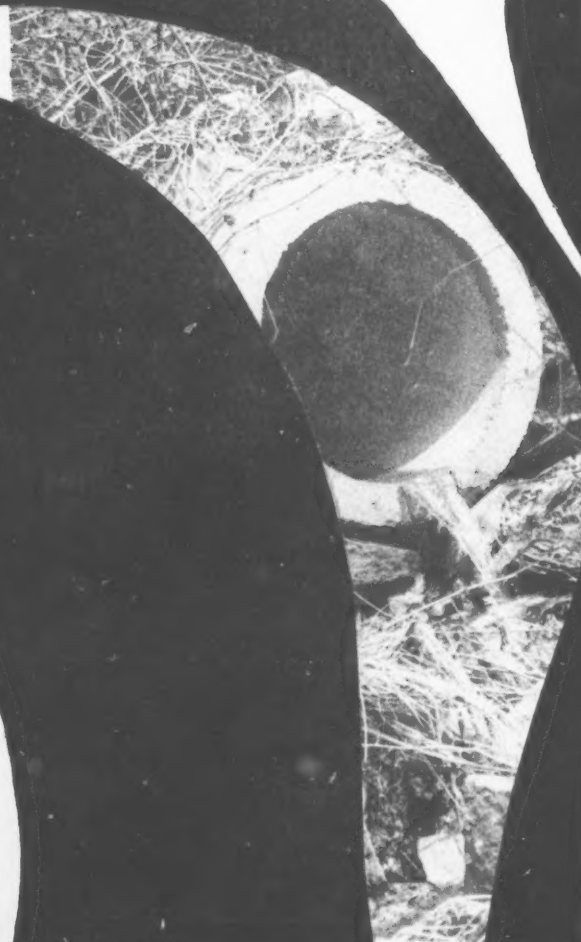
brookville
pa.

3 E

ENVIRONMENTAL

ECOLOGICAL

EDUCATION





BROOKVILLE
"3 E"

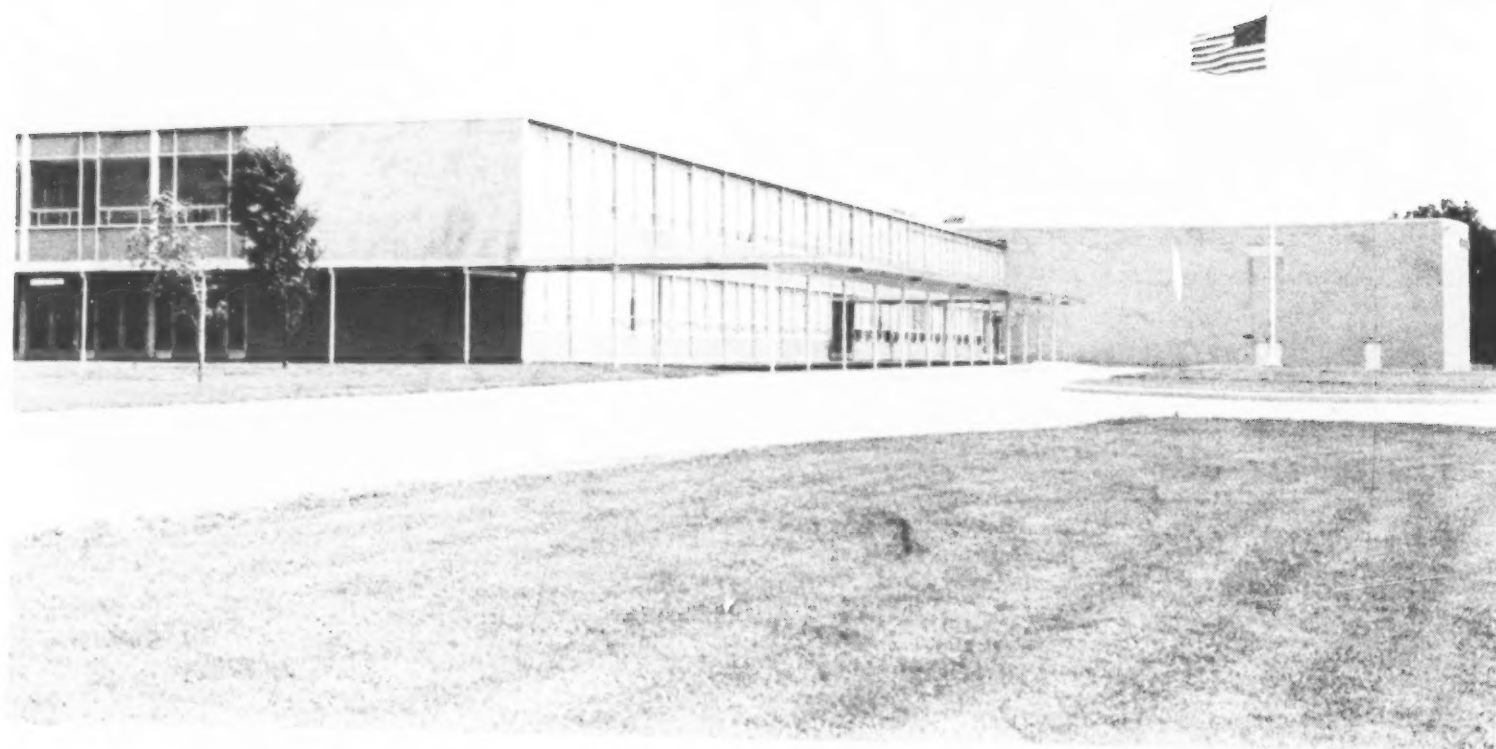
The Environmental-Ecological
Education Program
Brookville, Pa.

1970

ESEA, TITLE I

United States Office of Education
Pennsylvania Department of Education

James E. Pudlo
Director



BROOKVILLE AREA HIGH SCHOOL HOSTED THE ENVIRONMENTAL ECOLOGICAL EDUCATION PROGRAM

The Environmental Ecological Education program (EEE) was funded under Title I of the Elementary and Secondary Education Act. The EEE program, which operated at Brookville Area High School in Brookville, Jefferson County, consisted of three, two week sessions for five days a week with approximately 100 students participating each session. The students of fourth, fifth, and sixth grade age were recruited from Jefferson, Clarion, Venango, Forest, and Mercer counties. Aiding in the recruiting of students was the Research-Learning Center of Clarion State College, under the direction of Dr. John McClain. This agency also served in the evaluation of the program.

The four areas of concentration included science, arts and crafts, music and recreation. In the morning and afternoon sessions, the students participated in two science activities as well as an art or craft and recreation. The evening schedule was designed to utilize group activities in recreation, provide music enjoyment, and provide an opportunity to explore creative craft activities.

The approach to these activities was more personal and less traditional for the students. Through the use of aides, the children were given more personalized attention and help than would be possible in larger classes. Rather than having the classroom become a confining and restrictive place, freedom to explore in a multi-sensory approach was given. In addition to the classroom experiences, students visited strip mines, a deep mine, a cave, art galleries, a planetarium, a museum, and a zoo in order to take advantage of the numerous places of value to an environmental ecological program that were within our area. These activities were organized to have the students become active learners rather than merely passive listeners.



The EEE program was committed to exploring the environment, a subject which has become relevant to today's youth.

Beginning on June 21, 1970 and until July 31, 1970 approximately 300 students and 42 staff members were involved in ecological study. . . .

THE STUDY OF MAN'S ENVIRONMENT IS VITAL TO
TO THE YOUTH OF TODAY'S WORLD.

Attention was
given to
how the land
is used by man
and how
its use
will affect
his future.





Land areas that had been stripped and not properly planted were visited so that the student could see the damage done by improper land use. Sections of these areas were observed to have been planted so that they might be used as game protection areas. Acid streams, burdened with iron-oxide residue were observed and compared with streams that were pure and supporting life. Abandoned gas wells, spilling forth iron-oxide were also visited. This area showed how this water ruined forest areas and polluted streams.



STUDENTS COMPARED POLLUTED AND UNPOLLUTED AREAS

The students also traveled to unpolluted water areas and observed the environment of these regions. Thus, they were able to observe two water environment, polluted and unpolluted, and compare the kinds of plants and animals found in each.







THE WONDERS OF NATURE WERE EXPLORED



Triple "E" students
had the opportunity to
observe fields and
woods, to describe kinds
of plants, to find
insects and to
identify trees.





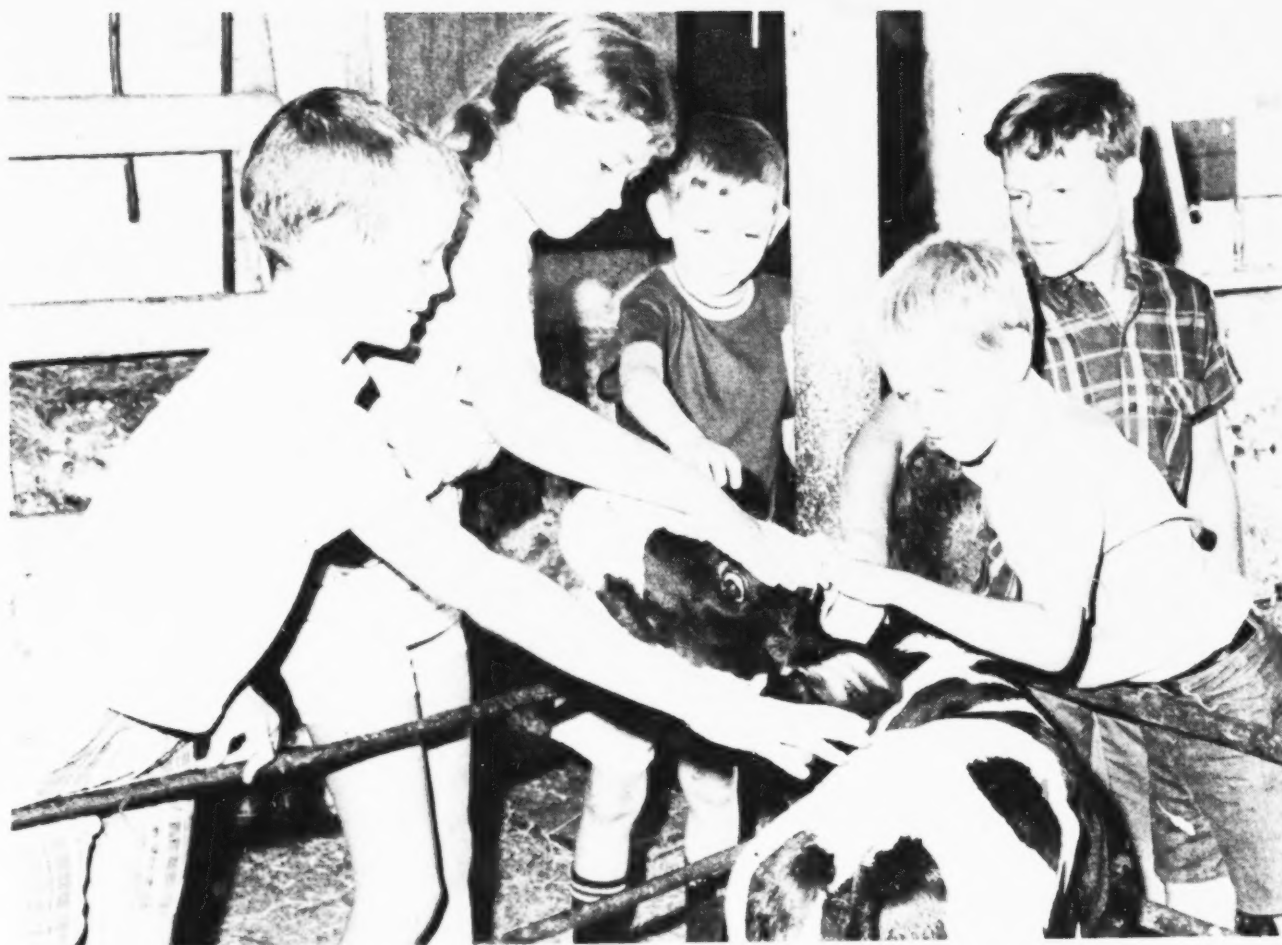
A FARM HAS VARIOUS ECOLOGICAL AREAS

One day of each session was designated as farm day. On this day, the entire program visited a farm area that had a variety of different ecological areas:





fields, meadow areas, stripped areas, old railroad cuts, forests, and limestone springs. The students observed the various vegetation on these areas and tested water and soil samples.



STUDENTS TALKED TO THE ANIMALS

Through ecological study, the children learned that we must share the environment with other living things. On the various field trips, they were able to view both domesticated and wild animals in order to gain an understanding of their habitats and their value to nature.







STRIP MINES MUST PROTECT THE ENVIRONMENT

At a local strip mine, the campers saw the operation of heavy equipment which removes the overburden of top soil, subsoil, and rocks to reach coal seams. The children rode on a drag-line which removed thirty-





two tons of overburden in one scoop. Then the group visited former stripped areas where the top soil had been replaced, seeded to grass, and replanted with trees.

A state mine inspector tested water in both a stream and treatment ponds. At these ponds acid water from coal cuts is collected and lime is applied to raise the pH to 9.







LOCAL EXPERTS ANSWERED QUESTIONS



The community provided resource people; such as Dr. Twiest from Clarion State College, Al Pedder--State Game Protector, and T. D. Castner--State Mine Inspector; who talked to the students about various aspects of the environment.



AIDES HELPED TO BRIDGE THE GENERATION GAP

The aides were college age people who helped to make the EEE program a success. They gave much of their time to the students. Not only did they assist in the classroom, but they accompanied students to all out of class activities, such as meals and field trips. On trips each aide was assigned several students to supervise during the day. As a result of this close association, friendships developed between students and aides. A favorite remark of students was "the aides are great."







ART, CRAFTS, AND MUSIC HELPED TO ROUND OUT THE STUDENT'S LIFE EXPERIENCES



Arts and crafts helped to stimulate the student's creativity by combining our natural resources with objects found at home and in the classroom. While on a field trip to a farm, the students learned to use a branch of a tree to support a weaving. Through songs concerning the environment, such as "I love the Mountains", the children learned to appreciate nature in a new way.

RECREATION PROVIDED A RELIEF FROM STUDY



Recreation played an important role in the EEE program. The students, after a long day of study, were able to enjoy the relaxation of swimming and playing kickball. To get away from the regular routine, the campers spent a day in Pittsburgh in which they took a ride on the Good Ship Lollipop.





"The alternative--I can see no other--is to have schools and classrooms in which each child in his own way can satisfy his curiosity, develop his abilities and talents, pursue his interest, and from the adults and older children around him get a glimpse of the great variety and richness of life. In short, the school should be a great smorgasbord of intellectual, artistic, creative, and athletic activities, from which each child could take whatever he wanted, and as much as he wanted, or as little".

John Holt, How Children Fail

THE ENVIRONMENTAL-ECOLOGICAL EDUCATION PROGRAM
ESEA, TITLE 1

United States Office of Education
Pennsylvania Department of Education

REGION F: Jefferson, Clarion, Mercer, Forest, and Venango Counties

BROOKVILLE AREA SCHOOLS

Mr. James L. Hysong, Superintendent
Mr. Ronald Giberson, Superintendent
Mr. Wilbert C. Pendleton, Director of Federal Funds

Cooperating in the planning and funding of this project:

Punxsutawney Area School:

Mr. Glenn M. Henery, Superintendent
Mr. Andrew Daskivich, Director of Federal Funds

Clarion Area Schools:

Mr. Herbert E. Schneider, Superintendent
Mr. Charles J. Moore, Director of Federal Funds

Redbank Valley Schools:

Mr. Joseph J. Kata, Supervising Principal

EEE FACULTY

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Larry McManigle, Assistant Director
John Mester, Science
Marilyn McDaniel, Science
Karen Craven, Arts and Crafts
Frank McMillen, Arts and Crafts
Sister Joan Marie Tobin, Arts and Crafts
Richard Reed, Music
John Sain, Recreation
Alfred Lefevre, Recreation
Ruth Clarke, Recreation
John Rockey, Publicity, Photography
John Fleming, Photography
William French, Newspaper
Margaret Weaver, Nurse

EEE FOOD SERVICE AND HOUSING

Les Turner, House Father
Verlee Turner, House Mother
Mary Kline, Food Service
Willivene Plyler, Food Service
Sophia Mitchell, Food Service
Mabel Byerly, Food Service
Martha Hopkins, Food Service
Hazel McNeil, Bookkeeper

Joe Green
 Bill Baughman
 Marc Bauer
 Tanis Pendleton
 Pat Guthrie
 Debbie Miller
 Shirley Reitz
 Cathy Park
 Cheryl Zimmerman

EEE AIDES

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 Mary McDaniel
 Richard LeVan
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 Leo Craven
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